



Geisinger Medical Center  
Danville, PA

## Quality Data Crucial to Quality Initiatives at Multi-site Healthcare System

### Robust Data Repository Supports Streamlined STEMI Protocol, ProvenCare® CABG Program and Clinical Research at Geisinger Health

#### Highlights

**Easily Managing Multiple Registries for Multiple Hospitals.** Two of Geisinger Health System's three hospitals are now submitting to ACC-NCDR® CathPCI Registry, STS Adult Cardiac Surgery Database, STS Congenital Cardiac Surgery Database and STS Thoracic Surgery Database via their Apollo® Advance clinical data repository.

**Integrating and Converting Nearly Two Decades' Worth of Data.** Geisinger's cardiovascular (CV) service lines had been using a myriad of custom databases from multiple vendors in multiple versions. Working with LUMEDX, they were able to integrate all their data—over 18 years' worth—into one single database.

**Supporting Quality and Best-Practices Initiatives.** Geisinger runs numerous quality and research programs, including a regional door-to-balloon reduction project and a 40-step CABG best-care project. The Apollo database enables physicians and staff to drill down and analyze their data.

Registries are a door to quality improvements, and the clinicians and staff at Geisinger Health System in central and northeastern Pennsylvania take their participation seriously. In an effort to integrate this important part of their cardiovascular service line seamlessly into their workflow, they have introduced the Apollo Advance clinical data repository. Making their data easier to collect, submit and access has enhanced efficiency and productivity—and supported the hospitals' far-reaching quality-improvement programs.

#### Managing Data in a Far-reaching Multi-facility Hospital System

Geisinger is composed of three hospitals, 41 community practice sites and 30 specialty clinics. Of the three hospitals, Geisinger Medical Center in Danville is the largest, performing an average of 2800 catheterizations a year, as well as 440 open heart surgeries. Geisinger Wyoming Valley and Geisinger South Wilkes-Barre are smaller, with Geisinger Wyoming Valley performing about half the yearly procedures as Danville. Together these hospitals serve 38 counties, primarily rural with some urban pockets, covering nearly two-thirds of the state of Pennsylvania. Pennsylvania has the second-largest senior population in the country.

“The quality of the data has improved with big thanks to the validation tool and the way things are programmed in the software, especially the parent-child fields. This tool is much simpler to use. It's easier to identify field names and what you have to include in your queries because it's at your fingertips. To have a data dictionary right there in front of you is such a help. And the system in general is faster.”

Melinda Reed  
Data Support Analyst  
Cardiovascular Services  
Geisinger Health System

The wide service area and demographic mix keep those involved in managing cardiovascular data very busy. However, implementing tools to support their quality programs and research projects has alleviated the burden.

### Converting Data into a Single, Powerful Database

Geisinger had been collecting CV data in myriad ways. When the IT team and management decided that a single data repository would better serve their rapidly accumulating CV information, they were faced with a daunting task: data conversion.

IT worked with LUMEDX to implement Apollo and ACC, STS, STS Congenital, and STS Thoracic registry modules, fed by an ADT interface—as well as CardioManager™ Performance Management System.

The implementation and conversion of all data took 18 months from start to finish. The conversion was particularly challenging because Geisinger had been using five different databases from three different vendors.

“We converted 18 years’ worth of data for the adult surgery module, converting from three different versions,” recalls Cardiovascular Services Data Support Analyst Melinda Reed. And that was just the beginning. “For congenital we converted eight years’ of data from two different versions. And we converted 12 years’ worth of Cath data in two different software packages, not just two versions.”

Now, that information is available in one database, almost instantly. They’ve also been able to reduce duplicate data entry via an ADT interface.

### Reducing Steps and Enhancing Data Quality

“In the past,” explains Melinda. “Our patient information wasn’t fully integrated. If I needed to run a report on STEMIs, I would manually go into one database [a dedicated STEMI database] and find a patient’s history, anything they tracked on the PCI form for the ACC, pulling them by Medical Record Number. Then I would go into another database [a general Cath database] and get the information I needed there. I also did the calculations. Today our databases are linked together, and in addition we’ve been able to get our calculations automatically.”

Geisinger recently went live with the Adult Cardiac Surgery Database module; this means staff no longer fill out the nine-page form they had been using. The software has been installed in the OR, where nurses and perfusionists record information during the procedure. “That record continues throughout the patient’s stay. A PA or nurse practitioner completes the record as the patient moves through the hospital,” Melinda says. Critical data is available much more quickly so the hospital can monitor and analyze it almost instantaneously.

“The quality of the data has improved with big thanks to the validation tool and the way things are programmed in the software, especially the parent-child fields,” Melinda says. “From a data analyst’s perspective, this tool is much simpler to use. It’s easier to identify field names and what you have to include in your queries because it’s at your fingertips. To have a data dictionary right there in front of you is such a help. And the system in general is faster.”



Geisinger Wyoming Valley

### DATA CONVERSION BY THE NUMBERS

#### STS Adult Cardiac Surgery Database

- 18 years’ of data
- 3 versions of software

#### STS Congenital Heart Surgery Database

- 8 years’ of data
- 2 versions of software

#### ACC-NCDR CathPCI Registry

- 12 years’ of data
- 2 different software packages

# great applications

## BUILDING CARDIOLOGY CENTERS OF EXCELLENCE

### Supporting Multiple Quality Initiatives

Cardiology at Geisinger has been initiating quality improvement projects for several years. They are pleased to discover that Apollo provides them with new tools to streamline workflow while supporting—and strengthening—their pursuit of quality.

“We track door-to-balloon times for our Level 1 Heart Attack Program,” Melinda says. They share their findings with regional hospitals, the Life Flight® [Geisinger’s emergency medical helicopter service] crews, ambulance crews and emergency departments in an organized, comprehensive effort to bring door-to-balloon times down. “We have a streamlined STEMI care protocol, so when patients come to an emergency department, they can be transferred to Geisinger and get the needed care faster—saving the heart tissue.”

“In the Cath lab, the director of the department developed different times he wanted to track,” recounts Melinda. “We tracked what time the patient arrived at the ER, what time they had their ECG and what time Life Flight® was called. Some patients come straight from the helipad to the Cath lab, so we tracked that as well. We tracked shifts and whether the Cath team was on site or had to be called in. If we called them in, we tracked the time it took for them to get here. So we tracked door-to-balloon and all those associated times in the database.”



*Life Flight® delivers patient to ER*

ProvenCare CABG is another such program: a team of physicians, clinicians and staff identified 40 steps to improve CABG outcomes. They looked at patient-care records and recommendations from the ACC and AHA. Using Apollo has helped Geisinger to monitor outcomes closely and then drill down to determine exactly how the program improves care. Data has revealed that following the 40 steps has led to quicker recovery times, fewer complications, shorter hospital stays, reduced readmission rates and other improvements.

### Streamlining Data Collection with Customizable Software

Such ambitious projects require intricate analysis of minute details. Prior to implementing Apollo, forms with STEMI and related data came to Melinda. She then did the paperwork and the calculations to enter into the database. Now this information is entered into Apollo; the calculations are done automatically; and appropriate fields are auto-populated. This eliminates redundant data entry, improves the quality of the data and ultimately makes it easier for staff to track additional data elements.

LUMEDX also built a number of custom forms and views to accommodate some of Geisinger’s additional databases, including a Cath STEMI view, Additional Cath/PCI Lesion Data, Outpatient Ambulatory Cath Follow-up view and more. These make managing information for the burgeoning number of internal quality initiatives much easier.

With nearly 40 competing hospitals in its 38-county service area, Geisinger’s steadfast commitment to quality enables its success. Introducing leading-edge software ensures that as physicians, clinicians and staff develop new quality and research projects, they have the all data they need to provide best-quality care, at hand and easily accessible.

### KEY LUMEDX SOLUTIONS AT GEISINGER HEALTH SYSTEM

- Apollo Advance  
*Clinical Data Repository*
- Apollo Toolkit
- CardioManager™  
*Performance Management System*
- Cath Module
- Export to ACC CathPCI Registry
- Export to STS Adult Cardiac Surgery Database
- Export to STS Congenital Surgery Database
- Export to STS Thoracic Surgery Database
- ADT Interface